

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A wireless communication system comprising:  
a plurality of communication stations as part of an ad hoc network without a  
relationship of a control station and controlled stations, wherein

respective communication stations transmit beacons with information concerning a  
network described thereon with each other to configure said network without using an access  
point,

said information concerning a network including indications of beacons received from  
other communication stations that are part of said network,

each beacon including neighboring beacon information pertaining to beacon  
transmission times of neighboring communication stations.

Claim 2 (Previously Presented): A wireless communication system according to  
claim 1, wherein said information concerning the network is information indicating whether a  
local station is aware of the presence of beacons the respective stations transmitted.

Claim 3 (Original): A wireless communication system according to claim 1, wherein  
each of said communication stations configure said network transmits a beacon signal at a  
predetermined time period.

Claim 4 (Original): A wireless communication system according to claim 3, wherein  
each of said communication stations performs reception continuously over a time period  
longer than its own beacon transmission interval at least once at a predetermined time.

Claim 5 (Original): A wireless communication system according to claim 2, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined time period.

Claim 6 (Original): A wireless communication system according to claim 2, wherein said information indicating whether the local station is aware of the presence of a beacon signal the respective stations transmitted is information indicated by a relative time at which the local station transmits a beacon signal.

Claim 7 (Original): A wireless communication system according to claim 2, wherein each of said communication station determines a beacon transmission timing of the local station based on information obtained from a beacon signal which the local station can receive from other station.

Claim 8 (Original): A wireless communication system according to claim 7, wherein each of said communication stations continues to receive a beacon from other station over a predetermined time period before starting transmitting a new beacon, it memorize reception time information of a received beacon transmitted from other station as first information, and it shifts said information described in said received beacon indicating whether the local station is aware of a presence of beacon based upon said first information, and it memorize the shifted information as second information.

Claim 9 (Original): A wireless communication system according to claim 8, wherein said communication station extracts a reception timing of a beacon, which the local station or other station can receive, from said second information, and it determines a target interval, which an interval in which a beacon reception time space becomes a maximum beacon space, and it sets a beacon transmission timing of the local station to a central time of said target interval.

Claim 10 (Original): A wireless communication system according to claim 9, wherein each of said communication stations attempts to receive a signal transmitted from other station during a predetermined time period and it memorize a time zone a beacon and other signal are received with a low frequency as third information.

Claim 11 (Original): A wireless communication system according to claim 10, wherein said communication station extracts each beacon space information, it determines a target interval, which an interval corresponding to a time zone with a low frequency at which a signal obtained from said third information, and it sets a beacon transmission timing of the local station to a central time of said target interval.

Claim 12 (Original): A wireless communication system according to claim 7, wherein said communication station which received alteration request message of a beacon transmission timing from other station determines a new beacon transmission timing.

Claim 13 (Original): A wireless communication system according to claim 1, wherein said information concerning the network is information indicating whether the local station is in reception state in which a timing beacon signals transmit.

Claim 14 (Original): A wireless communication system according to claim 13, wherein said information indicative of whether the local station is in reception state in which timing beacon signal transmit is information indicated by a relative time from a timing the local station transmit beacon.

Claim 15 (Original): A wireless communication system according to claim 13, wherein said specific time zone in which said beacon signal is transmitted is set to a transmission prohibit interval.

Claim 16 (Original): A wireless communication system according to claim 1, wherein said beacon transmission timing of said communication stations within said network is delayed a predetermined target beacon transmission timing by a random time, and describe information indicative of a delayed amount in said beacon.

Claim 17 (Original): A wireless communication system according to claim 16, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined time period.

Claim 18 (Original): A wireless communication system according to claim 16, wherein when each of said communication systems receives a beacon from other communication station, it calculates a target beacon transmission timing of said beacon

transmission station from a beacon reception time in consideration of a time indicative of said delay amount.

Claim 19 (Original): A wireless communication system according to claim 18, wherein said communication station adjusts a clock of the local station in accordance with a timing of other station, when there is difference between a target beacon transmission timing of other station predicted from the clock value memorized in local station and a target beacon transmission timing which results from subtracting a timing at an intentionally delayed beacon transmission time described in a beacon from which a beacon was received in actual practice from.

Claim 20 (Original): A wireless communication system according to claim 19, wherein said communication station adjusts a clock of the local station to a timing of other station, when the target beacon transmission timing of the beacon transmission station is delayed from the target beacon transmission time predicted by the local station.

Claim 21 (Original): A wireless communication system according to claim 16, wherein each of said communication stations describes the effect thereof in said beacon if said beacon transmission time is delayed due to an external primary factor when it transmits a beacon.

Claim 22 (Original): A wireless communication system according to claim 16, wherein said random time with which the beacon transmission timing is delayed from the target beacon transmission timing is given in the form of a pseudorandom sequence and the

value of said pseudorandom sequence is transmitted as information indicative of a delayed amount described in said beacon.

Claim 23 (Original): A wireless communication system according to claim 22, wherein each of said communication stations memorizes the value of said pseudorandom sequence described in said beacon and it calculates the next beacon transmission timing of said beacon transmission station by updating a pseudorandom sequence value of every predetermined period.

Claim 24 (Original): A wireless communication system according to claim 1, wherein it sets a predetermined time period in which a beacon transmission station can transmit a packet with a priority after has transmitted said beacon signal.

Claim 25 (Original): A wireless communication system according to claim 24, wherein it sets a time period in which each communication station transmit packet based upon predetermined contention control, after said predetermined time period in which said beacon transmission station can transmit a packet with a priority has expired.

Claim 26 (Original): A wireless communication system according to claim 25, wherein said communication station which communicates with said beacon transmission station can transmit a packet with a priority at said predetermined time period in which said beacon transmission station can transmit a packet with a priority.

Claim 27 (Original): A wireless communication system according to claim 24, wherein said communication station, which became aware of approach of a time at which

other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined time period.

Claim 28 (Original): A wireless communication system according to claim 24, wherein each of said communication stations recognizes the state in which it does not receive a signal from other station over a predetermined time period calculated by a predetermined procedure before the local station transmits a packet, and it sets said predetermined time period to be short during it can transmit a packet with a priority.

Claim 29 (Original): A wireless communication system according to claim 28, wherein each of said communication stations recognizes the state in which it does not receive a signal from other station over a predetermined time period calculated by a predetermined procedure before the local station transmits a packet, and it sets said predetermined time period to be long only during said predetermined time period immediately after it received a beacon from other station.

Claim 30 (Original): A wireless communication system according to claim 28, wherein each of said communication stations transmits a transmission request signal and recognizes reception of a response to said transmission request signal before the local station transmits a signal.

Claim 31 (Original): A wireless communication system according to claim 30, wherein each of said communication stations does not carry out virtual carrier sense when it

received the transmission request signal correctly and it carries out virtual carrier sense when it received the response to said transmission request signal correctly.

Claim 32 (Original): A wireless communication system according to claim 28, wherein it is determined by said communication station whether or not a media is clear over a time period corresponding to a stipulated maximum signal length before transmission, when it attempts to transmit a beacon signal immediately after it is changed from the sleep state to the active state.

Claim 33 (Original): A wireless communication system according to claim 28, wherein said communication station adds a unique preamble word to the beginning of a packet, and it also adds a mid-amble of a similar unique word to every predetermined payload length.

Claim 34 (Original): A wireless communication system according to claim 24, wherein said communication station, which transmit a stream traffic extracts a plurality of time period in which a beacon is not transmitted ,and it transmits a beacon or a signal similar to the beacon in the extracted time period.

Claim 35 (Original): A wireless communication system according to claim 34, wherein said communication station transmits said signal similar to the beacon continuously or intermittently.

Claim 36 (Original): A wireless communication system according to claim 34, wherein each of said communication stations recognizes the state in which it does not receive



a signal from other station over a predetermined time period calculated by a predetermined procedure before the local station transmits a packet, and it sets said predetermined time period to be short during it can transmit a packet with a priority.

Claim 37 (Withdrawn): A wireless communication system composed of a plurality of communication stations without a relationship of a control station and controlled stations, wherein each of said communication stations performs reception operation during a predetermined time period after it has transmitted a signal, and it stops reception operations when a new signal is not transmitted during said predetermined time period until it receives a signal next or until a time at which transmission is planned.

Claim 38 (Withdrawn): A wireless communication system according to claim 37, wherein each of said communication stations configure said network transmits a beacon signal at substantially a predetermined time period.

Claim 39 (Withdrawn): A wireless communication system according to claim 38, wherein each of said communication stations performs reception continuously over a time period longer than its own beacon transmission interval at least once at a predetermined time.

Claim 40 (Withdrawn): A wireless communication system according to claim 37, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined time period.

Claim 41 (Withdrawn): A wireless communication system according to claim 37, wherein when each of said communication stations holds data for other specific station, it carries out reception processing at a time in which said specific other station transmits a beacon, and it attempts to transmit the data to said other specific station in accordance with a predetermined procedure after said other specific station has finished transmitting a beacon.

Claim 42 (Withdrawn): A wireless communication system according to claim 41, wherein said data transmitted after said other station has finished transmitting a beacon is data having a large emergency as compared with ordinary data.

Claim 43 (Withdrawn): A wireless communication system according to claim 37, wherein said communication station energizes a receiver over a predetermined time period before it transmits a signal to detect the presence or absence of a signal transmitted from other station to thereby execute access control for avoiding collision of packet communication timing with that of other station.

Claim 44 (Withdrawn): A wireless communication system according to claim 43, wherein it is determined by said communication station whether or not a media is clear over a time period corresponding to a stipulated maximum signal length before transmission, when it attempts to transmit a beacon signal immediately after it is changed from the sleep state to the active state.

Claim 45 (Withdrawn): A wireless communication system according to claim 43, wherein when each of said communication stations holds data for other specific station, it

attempts to transmit memorized data to said other specific station at the timing before said other specific station transmit beacon in accordance with a predetermined procedure.

Claim 46 (Withdrawn): A wireless communication system according to claim 45, wherein said data transmitted after said other station has finished transmitting a beacon is data having a large emergency as compared with ordinary data.

Claim 47 (Withdrawn): A wireless communication system according to claim 37, wherein each of said communication stations attempts to transmit data to a station which is recognized as a destination station in receiving mode when it transmits data.

Claim 48 (Withdrawn): A wireless communication system according to claim 37, wherein each of said communication stations attempts to receive a beacon from other station recognized by the local station if it is determined that the local station is in the communication state.

Claim 49 (Withdrawn): A wireless communication system according to claim 48, wherein each of said communication stations describes information indicating that it has data to be transmitted to specific other station in a beacon transmitted from the local station and a communication station, which received said beacon, ask the beacon transmission station to transmits an data if it is determined that said communication station holds data to be transmitted to the beacon receive station.

Claim 50 (Withdrawn): A wireless communication system according to claim 48, wherein said wireless communication system does not attempt to receive a beacon

transmitted from a specific station if it is instructed that said communication station should not communicate with said specific station even when it is set to the environment in which it is able to receive a beacon from said specific station.

Claim 51 (Withdrawn): A wireless communication system according to claim 37, wherein each of said communication stations can continue to perform reception operation during a predetermined time period after it has transmitted some signal and it can stop reception operation until it receives a signal next or until a transmission reserve time when it does not receive a signal for the local station during said predetermined time period.

Claim 52 (Currently Amended): A wireless communication apparatus operating in a decentralized distributed communication environment constructed such that respective communication stations transmit beacons indicative of information concerning a network with each other at a predetermined time space comprising:

communication means for transmitting and receiving wireless data in said decentralized distributed communication environment without an access point serving as a master control station;

beacon signal generating means for generating a beacon signal indicative of information concerning a local station;

beacon signal analyzing means for analyzing a beacon signal received from a neighboring station by said communicating means; and

timing control means for controlling a beacon transmission timing at which said communication means transmits beacons as part of an ad hoc network, said information concerning a network including indications of beacons received from other communication stations that are part of said network, wherein

each beacon including neighboring beacon information pertaining to beacon transmission times of neighboring communication stations.

Claim 53 (Original): A wireless communication apparatus according to claim 52, wherein said information concerning the network written in the beacon generated from said beacon signal generating means is information indicating whether or not the local station is aware of a time at which a beacon signal is transmitted.

Claim 54 (Original): A wireless communication apparatus according to claim 52, wherein said timing control means transmits a beacon signal at a predetermined time space when a communication station joins a network.

Claim 55 (Original): A wireless communication apparatus according to claim 54, wherein said communication means performs reception continuously over a time period longer than its own beacon transmission interval at least once at a predetermined time.

Claim 56 (Original): A wireless communication apparatus according to claim 53, wherein said beacon signal generating means, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period and it energizes said communication means to transmit said beacon.

Claim 57 (Original): A wireless communication apparatus according to claim 53, wherein said information indicating whether or not the local station is aware of a time at

which a beacon signal is transmitted is information indicated by a relative time between said time and a time at which the local station transmits a beacon signal.

Claim 58 (Original): A wireless communication apparatus according to claim 53, wherein each of said timing control means determines a beacon transmission time based on information obtained from a beacon signal, analyzed by said beacon signal analyzing means, from other station.

Claim 59 (Original): A wireless communication apparatus according to claim 58, wherein said timing control means continues to receive a beacon from said communication means over a predetermined time period before starting transmitting a new beacon, it holds reception time information of a received beacon transmitted from other station as first information and it shifts information described in said received beacon indicating whether or not the local station is aware of a time at which a beacon signal is transmitted based upon said information and it holds the shifted information as second information.

Claim 60 (Original): A wireless communication apparatus according to claim 59, wherein said communication station extracts a reception time of a beacon, which the local station or the local station and other station can receive, from said second information, it determines an interval in which a beacon reception time space becomes a maximum beacon space as a target interval and it sets a beacon transmission time of the local station to a central time of said target interval.

Claim 61 (Original): A wireless communication apparatus according to claim 60, wherein said timing control means attempts to receive a signal transmitted from other station

by said communication means during a predetermined time period and it holds a time zone with a small frequency at which a beacon and other signal are received as third information.

Claim 62 (Original): A wireless communication apparatus according to claim 61, wherein said timing control means extracts each beacon space information, it determines an interval corresponding to a time zone with a small frequency at which a signal obtained from said third information as a target interval and it sets a beacon transmission time of the local station to a central time of said target interval.

Claim 63 (Original): A wireless communication apparatus according to claim 58, wherein said timing control means determines a new beacon transmission time if said beacon signal analyzing means judges a beacon transmission time alteration request message from other station.

Claim 64 (Original): A wireless communication apparatus according to claim 52, wherein said information concerning the network described in a beacon generated from said beacon signal generating means is information indicating whether or not the local station is aware of a time at which a received beacon signal is transmitted.

Claim 65 (Original): A wireless communication apparatus according to claim 64, wherein said information indicative of whether or not the local station is aware of a time at which a received beacon signal is transmitted is information indicated by a relative time between said time and a transmission time of a beacon signal from the local station.

Claim 66 (Original): A wireless communication apparatus according to claim 64, wherein said specific time zone in which said beacon signal is transmitted is set to a transmission prohibit interval by information described in the beacon generated from said beacon signal generating means.

Claim 67 (Original): A wireless communication apparatus according to claim 52, wherein said timing control means delays said transmission time of a beacon signal transmitted from a communication station within said network from a predetermined target beacon transmission time by a random time and said beacon signal generating means describes information indicative of a delayed amount in said beacon.

Claim 68 (Original): A wireless communication apparatus according to claim 67, wherein said beacon signal generating means, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, adds information for prohibiting a neighboring station from transmitting data over a predetermined period to a beacon and it energizes said communication means to transmit said resultant information.

Claim 69 (Original): A wireless communication apparatus according to claim 67, wherein when said communication means receives a beacon from other communication station, said timing control means calculates a target beacon transmission time from a beacon reception time in consideration of a time indicative of said delay amount.

Claim 70 (Original): A wireless communication apparatus according to claim 69, wherein said communication station adjusts a clock of the local station in accordance with a



timing of other station when a neighboring station target beacon transmission time predicted from the clock value memorized in the local station and a target beacon transmission time of a beacon transmission station which results from subtracting a time at which a beacon was received in actual practice and an intentionally delayed beacon transmission time described in a beacon are different from each other.

Claim 71 (Original): A wireless communication apparatus according to claim 70, wherein said communication station adjusts a clock of the local station in accordance with a timing of other station when the target beacon transmission time of the beacon transmission station is delayed from the target beacon transmission time predicted by the local station.

Claim 72 (Original): A wireless communication apparatus according to claim 67, wherein said beacon signal generating means describes a delay amount of a beacon transmission time in said beacon if said beacon transmission time is delayed due to an external primary factor when it transmits a beacon under control of said timing control means.

Claim 73 (Original): A wireless communication apparatus according to claim 67, wherein said random time with which the beacon transmission time is delayed from the target beacon transmission time is given in the form of a pseudorandom sequence and the state of said pseudorandom sequence is transmitted as information indicative of a delay amount described in said beacon.

Claim 74 (Original): A wireless communication apparatus according to claim 73, wherein said timing control means holds the state of said pseudorandom sequence described

in said beacon and it calculates the next beacon transmission time of said beacon transmission station by updating a pseudorandom sequence value of every predetermined period.

Claim 75 (Original): A wireless communication apparatus according to claim 52, wherein said timing control means sets a predetermined time period in which a beacon transmission station can transmit a packet with a priority after said communication means has transmitted said beacon signal.

Claim 76 (Original): A wireless communication apparatus according to claim 75, wherein said communication station sets a time period in which each communication station performs transmission based upon predetermined contention control after said predetermined time period in which said beacon transmission station can transmit a packet with a priority has expired.

Claim 77 (Original): A wireless communication apparatus according to claim 76, wherein said communication station which communicates with said beacon transmission station can transmit a packet with a priority at said predetermined time period in which said beacon transmission station can transmit a packet with a priority.

Claim 78 (Original): A wireless communication apparatus according to claim 75, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 79 (Original): A wireless communication apparatus according to claim 75, wherein said timing control means recognizes the state in which it does not receive a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be short during a predetermined time period in which it can transmit a packet with a priority.

Claim 80 (Original): A wireless communication apparatus according to claim 79, wherein said timing control means recognizes the state in which it does not receive a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be long only during said predetermined time period immediately after it received a beacon from other station.

Claim 81 (Original): A wireless communication apparatus according to claim 79, wherein each of said communication stations transmits a transmission request signal and recognizes reception of a response to said transmission request signal before said communication means transmits a signal.

Claim 82 (Original): A wireless communication apparatus according to claim 81, wherein each of said communication stations does not carry out virtual carrier sense when it received the transmission request signal correctly and it carries out virtual carrier sense when it received the response to said transmission request signal correctly.

Claim 83 (Original): A wireless communication apparatus according to claim 79, wherein it is determined by said communication station whether or not a media is clear over a

time period corresponding to a stipulated maximum signal length before transmission when it attempts to transmit a beacon signal immediately after it is changed from the sleep state to the active state.

Claim 84 (Original): A wireless communication apparatus according to claim 79, wherein said communication station adds a preamble of a unique word to the beginning of a packet transmitted from said communication means and it also adds a mid-amble of a similar unique word to every constant payload length.

Claim 85 (Original): A wireless communication apparatus according to claim 75, wherein said timing control means, which received a stream traffic transmission request, extracts a plurality of intervals in which a beacon is not transmitted and it transmits a beacon or a signal similar to the beacon in said plurality of extracted intervals.

Claim 86 (Original): A wireless communication apparatus according to claim 85, wherein said communication station transmits said signal similar to said beacon continuously or intermittently.

Claim 87 (Original): A wireless communication apparatus according to claim 85, wherein each of said communication stations recognizes the state in which it does not receive a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be short during a predetermined time period in which it can transmit a packet with a priority.

Claim 88 (Withdrawn): A wireless communication apparatus comprising a communication station of a wireless communication system composed of a plurality of communication stations without a relationship of a control station and controlled stations further comprising:

communication means for transmitting and receiving wireless data; and

control means for performing reception operation during a predetermined time period after said communication means has transmitted a signal and stopping reception operation until a signal is received next or until a transmission planned time when said communication means does not transmit a new signal during said predetermined time period.

Claim 89 (Withdrawn): A wireless communication apparatus according to claim 88, wherein said communication means transmits a beacon signal periodically at substantially a constant space.

Claim 90 (Withdrawn): A wireless communication apparatus according to claim 89, wherein said communication means continuously performs reception over a time period longer than a beacon transmission space of the local station more than once in a decided time.

Claim 91 (Withdrawn): A wireless communication apparatus according to claim 88, wherein said communication means, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 92 (Withdrawn): A wireless communication apparatus according to claim 88, wherein when said communication means holds information for other specific station, it carries out reception processing at a time in which said specific other station transmits a beacon and it attempts to transmit memorized information to said other specific station in accordance with a predetermined procedure after said other specific station has finished transmitting a beacon.

Claim 93 (Withdrawn): A wireless communication apparatus according to claim 92, wherein said information transmitted after said other station has finished transmitting a beacon is information having a large emergency as compared with ordinary data.

Claim 94 (Withdrawn): A wireless communication apparatus according to claim 88, wherein said communication means energizes a receiver over a predetermined time period before it transmits a signal to detect the presence or absence of a signal transmitted from other station to thereby execute access control for avoiding collision of packet communication timing with that of other station.

Claim 95 (Withdrawn): A wireless communication apparatus according to claim 94, wherein when said communication means attempts to transmit a signal after it has been changed from the sleep state to the active state, prior to transmission, it is determined by said control means during a time period corresponding to the stipulated maximum signal length whether or not the media is clear.

Claim 96 (Withdrawn): A wireless communication apparatus according to claim 94, wherein when each of said communication stations holds information for other specific

station, it attempts to transmit memorized information to said other specific station in accordance with a predetermined procedure immediately before said other specific station transmits a beacon.

Claim 97 (Withdrawn): A wireless communication apparatus according to claim 96, wherein said information transmitted after said other station has finished transmitting a beacon is information having a large emergency as compared with ordinary data.

Claim 98 (Withdrawn): A wireless communication apparatus according to claim 88, wherein each of said communication stations attempts to transmit information to a station which is recognized as a destination station operating to receive information when it transmits information.

Claim 99 (Withdrawn): A wireless communication apparatus according to claim 88, wherein said control means attempts to receive a beacon from other station recognized by the local station if it is determined that the local station is in the communication state.

Claim 100 (Withdrawn): A wireless communication apparatus according to claim 99, wherein each of said communication stations describes information indicating that it has information to be transmitted to specific other station in a beacon transmitted from said communication means and performs transmission after it received a transmission request signal from said other station.

Claim 101 (Withdrawn): A wireless communication apparatus according to claim 99, wherein said control means does not attempt to receive a beacon transmitted from a specific

station if it is instructed by a signal received by said communication means that it should not communicate with said specific station even when it is set to the environment in which it is able to receive a beacon from said specific station.

Claim 102 (Withdrawn): A wireless communication apparatus according to claim 88, wherein said control means can continue to perform reception operation during a predetermined time period after it has transmitted some signal and it can stop reception operation until it receives a signal next or until a transmission planned time when it does not receive a signal for the local station during said predetermined time period.

Claim 103 (Currently Amended): A wireless communication method in an ad hoc network operating under a decentralized distributed communication environment constructed when respective communication station transmit beacons with information concerning a network written therein with each other at a predetermined time space comprising the steps of:

a beacon signal generating step for generating a beacon signal in which information concerning a local station is written;

a beacon signal analyzing step for analyzing a beacon signal received from a neighboring station by a communication mechanism; and

a timing control step for controlling beacon transmission timing at which said communication mechanism transmits a beacon, said timing control step does not include using an access point, said information concerning a network including indications of beacons received from other communication stations that are part of said network, wherein each beacon including neighboring beacon information pertaining to beacon transmission times of neighboring communication stations.



Claim 104 (Original): A wireless communication method according to claim 103, wherein said information concerning the network is information indicating whether or not the local station is aware of a time at which a beacon signal is transmitted.

Claim 105 (Original): A wireless communication method according to claim 103, wherein each of said communication stations joined said network transmits a beacon signal at a predetermined time space.

Claim 106 (Original): A wireless communication method according to claim 105, wherein each of said communication stations performs reception continuously over a time period longer than its own beacon transmission interval at least once at a predetermined time.

Claim 107 (Original): A wireless communication method according to claim 104, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 108 (Original): A wireless communication method according to claim 104, wherein said information indicating whether or not the local station is aware of a time at which a beacon signal is transmitted is information indicated by a relative time between said time and a time at which the local station transmits a beacon signal.

Claim 109 (Original): A wireless communication method according to claim 104, wherein each of said communication station determines a beacon transmission time of the local station based on information obtained from a beacon signal which the local station can receive from other station.

Claim 110 (Original): A wireless communication method according to claim 58, wherein each of said communication stations continues to receive a beacon from other station over a predetermined time period before starting transmitting a new beacon, it holds reception time information of a received beacon transmitted from other station as first information and it shifts information described in said received beacon indicating whether or not the local station is aware of a time at which a beacon signal is transmitted based upon said information and it holds the shifted information as second information.

Claim 111 (Original): A wireless communication method according to claim 110, wherein said communication station extracts a reception time of a beacon, which the local station or the local station and other station can receive, from said second information, it determines an interval in which a beacon reception time space becomes a maximum beacon space as a target interval and it sets a beacon transmission time of the local station to a central time of said target interval.

Claim 112 (Original): A wireless communication method according to claim 111, wherein each of said communication stations attempts to receive a signal transmitted from other station during a predetermined time period and it holds a time zone with a small frequency at which a beacon and other signal are received as third information.

Claim 113 (Original): A wireless communication method according to claim 112, wherein said communication station extracts each beacon space information, it determines an interval corresponding to a time zone with a small frequency at which a signal obtained from said third information as a target interval and it sets a beacon transmission time of the local station to a central time of said target interval.

Claim 114 (Original): A wireless communication method according to claim 109, wherein said communication station which received a beacon transmission time alteration request message from other station determines a new beacon transmission time.

Claim 115 (Original): A wireless communication method according to claim 103, wherein said information concerning the network is information indicating whether or not the local station is aware of a time at which a received beacon signal is transmitted.

Claim 116 (Original): A wireless communication method according to claim 115, wherein said information indicative of whether or not the local station is aware of a time at which a received beacon signal is transmitted is information indicated by a relative time between said time and a transmission time of a beacon signal from the local station.

Claim 117 (Original): A wireless communication method according to claim 115, wherein said specific time zone in which said beacon signal is transmitted is set to a transmission prohibit interval.

Claim 118 (Original): A wireless communication method according to claim 103, wherein said transmission time of a beacon signal is delayed from a predetermined target

beacon transmission time by a random time and information indicative of a delayed amount is described in said beacon.

Claim 119 (Original): A wireless communication method according to claim 118, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 120 (Original): A wireless communication method according to claim 118, wherein when each of said communication systems receives a beacon from other communication station, it calculates a target beacon transmission time of said beacon transmission station from a beacon reception time in consideration of a time indicative of said delay amount.

Claim 121 (Original): A wireless communication method according to claim 120, wherein said communication station adjusts a clock of the local station in accordance with a timing of other station when a neighboring station target beacon transmission time predicted from the clock value memorized in the local station and a target beacon transmission time of a beacon transmission station which results from subtracting a time at which a beacon was received in actual practice and an intentionally delayed beacon transmission time described in a beacon are different from each other.

Claim 122 (Original): A wireless communication method according to claim 121, wherein said communication station adjusts a clock of the local station in accordance with a

timing of other station when the target beacon transmission time of the beacon transmission station is delayed from the target beacon transmission time predicted by the local station.

Claim 123 (Original): A wireless communication method according to claim 118, wherein each of said communication stations describes a delay amount of a beacon transmission time in said beacon if said beacon transmission time is delayed due to an external primary factor when it transmits a beacon.

Claim 124 (Original): A wireless communication method according to claim 118, wherein said random time with which the beacon transmission time is delayed from the target beacon transmission time is given in the form of a pseudorandom sequence and the state of said pseudorandom sequence is transmitted as information indicative of a delay amount described in said beacon.

Claim 125 (Original): A wireless communication method according to claim 124, wherein each of said communication stations holds the state of said pseudorandom sequence described in said beacon and it calculates the next beacon transmission time of said beacon transmission station by updating a pseudorandom sequence value of every predetermined period.

Claim 126 (Original): A wireless communication method according to claim 103, wherein said communication station sets a predetermined time period in which a beacon transmission station can transmit a packet with a priority after said beacon transmission station has transmitted said beacon signal.

Claim 127 (Original): A wireless communication method according to claim 126, wherein said communication station sets a time period in which each communication station performs transmission based upon predetermined contention control after said predetermined time period in which said beacon transmission station can transmit a packet with a priority has expired.

Claim 128 (Original): A wireless communication method according to claim 127, wherein said communication station which communicates with said beacon transmission station can transmit a packet with a priority at said predetermined time period in which said beacon transmission station can transmit a packet with a priority.

Claim 129 (Original): A wireless communication method according to claim 126, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 130 (Original): A wireless communication method according to claim 126, wherein each of said communication stations recognizes the state in which it does not receive a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be short during a predetermined time period in which it can transmit a packet with a priority.

Claim 131 (Original): A wireless communication method according to claim 130, wherein each of said communication stations recognizes the state in which it does not receive

a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be long only during said predetermined time period immediately after it received a beacon from other station.

Claim 132 (Original): A wireless communication method according to claim 130, wherein each of said communication stations transmits a transmission request signal and recognizes reception of a response to said transmission request signal before the local station transmits a beacon signal.

Claim 133 (Original): A wireless communication method according to claim 132, wherein each of said communication stations does not carry out virtual carrier sense when it received the transmission request signal correctly and it carries out virtual carrier sense when it received the response to said transmission request signal correctly.

Claim 134 (Original): A wireless communication method according to claim 130, wherein it is determined by said communication station whether or not a media is clear over a time period corresponding to a stipulated maximum signal length before transmission when it attempts to transmit a beacon signal immediately after it is changed from the sleep state to the active state.

Claim 135 (Original): A wireless communication method according to claim 130, wherein said communication station adds a preamble of a unique word to the beginning of a packet and it also adds a mid-amble of a similar unique word to every constant payload length.

Claim 136 (Original): A wireless communication method according to claim 126, wherein said communication station, which received a stream traffic transmission request, extracts a plurality of intervals in which a beacon is not transmitted and it transmits a beacon or a signal similar to the beacon in said plurality of extracted intervals.

Claim 137 (Original): A wireless communication method according to claim 136, wherein said communication station transmits said signal similar to said beacon continuously or intermittently.

Claim 138 (Original): A wireless communication method according to claim 136, wherein each of said communication stations recognizes the state in which it does not receive a signal from other station over a predetermined period calculated by a predetermined procedure before the local station transmits a packet and it sets said predetermined period to be short during a predetermined time period in which it can transmit a packet with a priority.

Claim 139 (Withdrawn): A wireless communication method for performing wireless communication in a network composed of a plurality of communication stations without a relationship of a control station and controlled stations comprising the steps of:

a transmission and reception step for performing reception operation during a predetermined time period after a signal was transmitted; and

a reception timing control step for stopping reception operation until a signal is received next or until the transmission planned time when a new signal is not transmitted during said predetermined time period.



Claim 140 (Withdrawn): A wireless communication method according to claim 139, wherein each of said communication stations joined said network transmits a beacon signal periodically at substantially a constant space.

Claim 141 (Withdrawn): A wireless communication method according to claim 140, wherein each of said communication stations continuously performs reception over a time period longer than a beacon transmission space of the local station more than once in a decided time.

Claim 142 (Withdrawn): A wireless communication method according to claim 139, wherein said communication station, which became aware of approach of a time at which other station plans to transmit a beacon with reference to a clock value memorized in the local station, transmits information for prohibiting a neighboring station from transmitting data over a predetermined period.

Claim 143 (Withdrawn): A wireless communication method according to claim 139, wherein when each of said communication stations holds information for other specific station, it carries out reception processing at a time in which said specific other station transmits a beacon and it attempts to transmit memorized information to said other specific station in accordance with a predetermined procedure after said other specific station has finished transmitting a beacon.

Claim 144 (Withdrawn): A wireless communication method according to claim 143, wherein said information transmitted after said other station has finished transmitting a beacon is information having a large emergency as compared with ordinary data.

Claim 145 (Withdrawn): A wireless communication method according to claim 139, wherein said communication station energizes a receiver over a predetermined time period before it transmits a signal to detect the presence or absence of a signal transmitted from other station to thereby execute access control for avoiding collision of packet communication timing with that of other station.

Claim 146 (Withdrawn): A wireless communication method according to claim 145, wherein when said communication station attempts to transmit a signal after it has been changed from the sleep state to the active state, prior to transmission, it is determined by said communication station during a time period corresponding to the stipulated maximum signal length whether or not the media is clear.

Claim 147 (Withdrawn): A wireless communication method according to claim 145, wherein when each of said communication stations holds information for other specific station, it attempts to transmit memorized information to said other specific station in accordance with a predetermined procedure immediately before said other specific station transmits a beacon.

Claim 148 (Withdrawn): A wireless communication method according to claim 147, wherein said information transmitted after said other station has finished transmitting a beacon is information having a large emergency as compared with ordinary data.

Claim 149 (Withdrawn): A wireless communication method according to claim 139, wherein each of said communication stations attempts to transmit information to a station

which is recognized as a destination station operating to receive information when it transmits information.

Claim 150 (Withdrawn): A wireless communication method according to claim 139, wherein each of said communication stations attempts to receive a beacon from other station recognized by the local station if it is determined that the local station is in the communication state.

Claim 151 (Withdrawn): A wireless communication method according to claim 150, wherein each of said communication stations describes information indicating that it has information to be transmitted to specific other station in a beacon transmitted from the local station and a communication station, which received said beacon, transmits an information transmission request signal to the beacon transmission station if it is determined that said communication station holds information to be transmitted to the local station.

Claim 152 (Withdrawn): A wireless communication method according to claim 150, wherein said wireless communication system does not attempt to receive a beacon transmitted from a specific station if it is instructed that said communication station should not communicate with said specific station even when it is set to the environment in which it is able to receive a beacon from said specific station.

Claim 153 (Withdrawn): A wireless communication method according to claim 139, wherein each of said communication stations can continue to perform reception operation during a predetermined time period after it has transmitted some signal and it can stop

reception operation until it receives a signal next or until a transmission reserve time when it does not receive a signal for the local station during said predetermined time period.

Claim 154 (Currently Amended): A computer readable medium encoded with a computer program written in a computer readable format such that processing for being operated under a decentralized distributed communication environment in an ad hoc network constructed when respective communication stations transmit beacons with information concerning a network written thereon transmit with each other at a predetermined time space is executed on a computer system comprising the steps of:

a beacon signal generating step for generating a beacon signal in which information concerning a local station is written;

a beacon signal analyzing step for analyzing a beacon signal received from a neighboring station by a communication mechanism; and

a timing control step for controlling beacon transmission timing by said communication mechanism, said timing control step does not include using an access point, said information concerning a network including indications of beacons received from other communication stations that are part of said network, wherein

each beacon including neighboring beacon information pertaining to beacon transmission times of neighboring communication stations.

Claim 155 (Withdrawn): A computer program written in the form of a computer readable format such that processing for making wireless communication on a network composed of a plurality of communication stations without relationship between a control station and controlled stations is executed on a computer system comprising the steps of:

a transmission and reception step for executing reception step during a predetermined time period after a signal has been transmitted; and

a reception timing control step for stopping reception operation until a signal is received next or until a transmission planned time if said communication station does not transmit a new signal during said predetermined time period.